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| Title | Mind the gap: perceptions and experiences of a gender gap at a Canadian research institute and potential strategies to mitigate this gap, a sequential mixed methods study using a survey and individual interviews. |
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| Reviewer 1 | Soheila Pashang |
| Institution | Social Services-Immigrant and Refugees, Seneca College, Toronto, Ont. |
| General comments (author response in bold) | <p>1. Abstract - line 40 reads, "unconscious bias in hiring". I believe this issue is indeed very conscious decision/ problem considering 90.5% gap in gender participation. You have rightfully raised a very important concern through your study and I suggest to name the problem as is (i.e., Bias in Hiring"</p> <p>Response: We appreciate this concern and while there may be explicit bias in hiring within the institution, the participants did not specify this in their interviews and instead perceived that it was likely unintentional and due to lack of transparent and explicit hiring processes.</p> <p>2. Page 5, line 50 reads, "We anticipated that 4 to 6 participants in each category....". It helps to know the field/domain of each category (you can reference the page number of appendix). Also, the sample is very small to be generalized.</p> <p>Response: We have referenced an appendix (Manuscript line 125, page 7) that displays the categories of the recruitment targets. We acknowledge that due to the small sample size, the findings may not be generalizable. This is an inherent limitation of qualitative research. Qualitative research is used to obtain detailed descriptions of participant experiences in an effort to explain phenomena –it is not used to describe variation across a population, as in quantitative research (Guest, 2013).</p> <p>Changes made: We have clarified the limitation addressed in the interpretation: 'There are limitations to our study. First, it was conducted at a single institution but it does represent a large and diverse group of scientists who conduct basic and clinical research. Second, the interview findings may not be generalizable to other departments or institutions given the sample size. However, saturation of themes was achieved and the sample included representation from all career stages and job descriptions. Moreover, qualitative research is used to generate rich descriptions and explanatory data; it is not used to obtain population-based estimates, as in quantitative research.(19)' (Manuscript line 442-447, page 21)</p> <p>3. Page 7 and 8 showcases gender disparities - how this gap has impacted your sample in specific and study in general? can you provide gender ratio of your research participants?</p> <p>Response: The gender ratio of our research participants is nearly 1:1, with 11 out of the 21 participants being woman. This is indicated in Table 2.</p> <p>4. Page 9, line 7 reads, "Some female...". I am not sure what you mean by Some? Can you elaborate this issue throughout the paper (I found various sections of your paper that refers to "Some".</p> <p>Response: We have deliberately used the neutral term "some" to indicate that a proportion, though not all, participants held a certain perspective. We did not quantify the number of participants that held each view in order to avoid assigning undue emphasis on certain views in comparison with others. For the same reason we also did not use phrases such as "the majority of" or "most participants". Sample sizes in qualitative research are usually small so frequency does not determine the value of themes (Pyett, 2003). We have made an effort to place equal emphasis on all themes raised by participants. If the editor feels elaboration of qualitative methods in this regard would be useful to readers, we can add this explanation to the methods section.</p> <p>5. Page 9, line 33, under "Impact on culture at the research institute". I believe this section suffers from theoretical analysis on the discourse of gender. The authors can link participants perception of problem (culture) to the intersectionality of gender with scientific knowledge produced across science which not only excludes women's presence, voice and talent but also its implications on the overall health and well-being of our society. How women are negatively affected when science and scientific knowledge is merely male?</p> <p>Response: Our methods state that we have used a thematic analysis for Phase 2 (Braun, 2006). Theoretical analysis and the development of theory is typical of grounded theory methodology (Birks, 2011). As is typical with thematic analysis, we have chosen to present the themes as they have been described by participants and left our more interpretive statements for the discussion section.</p> <p>Changes made: We have added the following to the Interpretation (line 367-376, page 17-18): 'The experiences of men and women are different and it is critical that all are represented in research to ensure that society benefits from these differences. For example, traditionally, research has failed to include gender as a variable; this includes all pillars of research from animal studies through to clinical studies.(21, 22) Failing to use male and female cells, tissues and animals can lead to inadequate knowledge and failure to understand how to tailor diagnosis and therapy.(21) Similarly, lack of consideration of gender differences in clinical research can lead to inaccurate results. (23) For example, in the past it was noted that women who had an atypical disease presentation for myocardial infarction (which occurs more often in women than men) received inadequate assessment and treatment.(24) Thus, lack of</p> |

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| | <p>representation of women not only impacts research and its impact, but represents a waste of human capital.(25)'</p> <p>6. Page 10, line 23, again I strongly believe gender bias is beyond unconscious act. There are many critical feminist literature on the discourse of gender and knowledge to refer to. Response: As noted above, our participants did not comment on intentional bias and thus we did not focus on this. We have added a statement to illustrate this in the Interpretation (line 360-363, page 17). Changes made: 'The participants in this study did not mention that they believe there is intentional bias against women within the institution. While others may perceive this to be the case, other groups have similarly noted that 'unintentional biases and outmoded institutional structures' are hindering access and advancement of women in academics.(20)'</p> <p>7. Page 11, Sub-heading "Historical trends.....". Again this section can benefit from reference to critical gender analysis. Response: We have added material in the Interpretation (line 399-405, page 19) to expand on this: Changes made: 'The gender gap in academics is longstanding and it is highly unlikely that 'the tincture of time' will resolve it given that women have outnumbered men at student and junior faculty levels for more than 25 years in Canada (1) and research shows that there are no significant differences in baseline career aspirations between women and men (29). Literature suggests that the pathway to a research career is impacted by socialization and stereotypes that define roles and expectations before university.(1, 30) Gender stereotypes begin early in life but academic success is achievable when opportunities are available.(1, 31)'</p> <p>8. Page 14: It would be very useful if authors make recommendations about gender bias in research as a systemic problem which should be addressed systemically through transparent policy, procedures and practice with St. Michael (as a very progressive institution) taking leadership in creating a committee to oversee such change. This includes ensuring women have equitable access (not necessarily equal access) that ensures women's inclusion (provides facilities/resources to increase women's participation). Response: This is a great suggestion and we have added this to the Interpretation (line 430-436, page 20-21). Changes made: 'Based on this research, our research institute has developed a working group to oversee the implementation of the recommendations identified by study participants. To date, it has developed guides for search committees and has invited a woman to join the institute's leadership team. Additional recommendations that have been made include assessing salary support for researchers to assess equity, ensuring appropriate gender representation on all committees and research rounds, developing a mentorship program for scientists, and creating informal networking events for researchers.'</p> |
| Reviewer 2 | Deirdre Weymann |
| Institution | BC Cancer Agency, Canadian Centre for Applied Research in Cancer Control (ARCC), Vancouver, BC |
| General comments (author response in bold) | <p>1. From the Introduction, it is unclear that the study is related to health or health services and appears to be better suited for a more general labor economics journal. A rationale is needed as to why this study chose to focus on a health-related research institution. Further, the existence of a gender gap in wages and career advancements in other settings is well documented in labor economics literature. Yet, the authors only provide three references in their introduction/background. Response: We have added information in the abstract and introduction that this study was conducted at a university-affiliated, hospital-based research institute as this is where the authors are located. Additional references have been added to the introduction as in comment 1 (page 1).</p> <p>2. In the article, the authors fail to discuss the possible differences in existing or perceived gender gaps in health-related research relative to other disciplines. From my understanding, the gender gap is likely less pronounced in health-related research relative to, say, engineering, economics, or other male-dominated research areas. This topic should be addressed in the introduction and/or interpretation. Response: We have added the following sentences to the introduction (line 53-55, page 4): Changes made: 'While the pipeline is not the cause for the disparity in biomedical and behavioural sciences where women have received more than 50% of the PhDs for many years, (1) it may be a contributor in fields such as engineering, physics and computer science (2).' (Manuscript line 53-55, page 4)</p> <p>3. The authors have time-series data from 1999-2014. They mention looking at the trend in hiring/retention over the period, but in their Results they only report differences in the direction of the gender gap. Did the magnitude of the gender gap change over the period, overall or in any position? Were any changes over time statistically significant? Response: The time series data that was available to us was hiring date, which we summarized as total numbers hired in a given year. Unfortunately, data did not include whether or not those hired in previous years were retained. Gender gap in hiring varied significantly across the years, where the median gap is 40% (IQR: [25.5%, 56.3%]). The smallest observed hiring gap was 9.1% while the maximum gap observed was 81.8%. Nevertheless, no trend (increasing or decreasing) overtime was observed. We have revised the manuscript to clarify this (Manuscript line 164-174, page 9). Changes made: As of December 30, 2014, there were 206 active scientists appointed to the</p> |

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| | <p>research institute, among them 30.1% (N=62) were women and 69.9% (N=144) were men, indicating a 39.8% gender gap. This gap in gender was observed across different appointment status (clinician vs non-clinician, associate vs full time), research discipline, and academic ranking as presented in detail below. We looked at hiring of scientists over the 15-year period (Figure 1) since the research Institute was launched and the results show that there is significant gender gap in appointments, where more men than women were hired each year except for 2004 and 2014. The gender gap varies from year to year, and the median gender gap was 40% (IQR: [25.5%, 56.3%]). The minimum gap observed was 14.3% (in 2005) and the maximum was 81.8% (in 2006). Although the gap in general was consistently observed throughout the 15 years, there was no trend (either increasing or decreasing) observed for differences in hiring over time across job descriptions'</p> <p>4. From the first sentence of the Phase I results section, it seems that the authors estimated the total cumulative gender gap over the period. This does not seem to be the most appropriate way to present results, given possible changes over time. They should consider focusing on the prevalence of a gender gap across disciplines in 2014, followed by a presentation of changes over time. Were gender gaps identified statistically significant?</p> <p>Response: There were 206 scientists active at the research institute in 2014, and results presented indeed were the overall prevalence of gender gap and across appointment status, research disciplines as well as academic rankings. We have revised the paragraph accordingly to reflect this as noted in the above comment (comment 3, pages 7-8).</p> <p>5. In the presentation of qualitative study results, the authors provide no information on demographics in text. It is, in my opinion, important to discuss whether sex, age, time of appointment, and length of employment, were adequately represented in the study. For example, if more women than men were interviewed, this could bias the results of the qualitative study. While this information is available in Table 2, it would be worth including this in text. Also, 15 years is a lengthy time horizon, and individuals hired at the beginning of the period may have very different ideas about gender gaps in the workplace relative to those who were hired towards the end of the period. To mitigate confidentiality concerns, characteristics could be discussed using ranges.</p> <p>Response: We have included demographic information in the text of the manuscript (Manuscript line 195-197, page 10).</p> <p>6. I am concerned that for a study on a topic that is, generally, well documented, the authors only provide 13 references. Further research may enhance the Introduction and Interpretation sections.</p> <p>Response: Additional references have been added as appropriate. For example, 11 additional references have been added to the Introduction. We have also clarified that reference 1 is a comprehensive review of the literature. Similarly we have added 14 references to the discussion. We have focused on including knowledge syntheses where possible as we believe these are most informative.</p> <p>Minor:</p> <p>1. Abstract –Background typo: "We explored the gender distribution..."</p> <p>Response: This change has been made.</p> <p>2. Introduction – Please provide additional peer-reviewed references in addition to Reference 1.</p> <p>Response: This has been done.</p> <p>3. In the Introduction, the authors mention evidence of a gender gap in CIHR funding. It would be helpful to provide evidence of differences in funding for other research grants (ex: Michael Smith Foundation, Terry Fox Institute, or non-health-related institutions.)</p> <p>Response: We have not been able to access similar data for other funding agencies in Canada but have reached out to these groups to see if these will be available in the future.</p> <p>4. The others provide no comparisons to international literature. While this is a Canadian study, it would be interesting to know whether similar gender gaps and perceptions have been found in other comparable countries.</p> <p>Response: As noted in response to the above reviewer, this material has been added.</p> <p>5. Figure 1 is not provided.</p> <p>Response: Figure 1 is now included.</p> <p>6. Please provide more information about impacts of conducting this research at a single institution (i.e. generalizability of results) in Limitations section.</p> <p>Response: We have added the following:</p> <p>Changes made: 'We have recently begun conducting a study at the other hospitals in Toronto and are seeing similar results.' (Manuscript line 447-448, page 21)</p> <p>7. Please discuss implications of small sample size in Limitations section, which can affect the quantitative analysis.</p> <p>Response: Please see response to comment above.</p> |
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